Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications	)	PS Docket No. 11-153
	)	
	)	
Framework for Next Generation 911 Deployment	)	PS Docket No. 10-255
	)	

REPLY COMMENTS OF BANDWIDTH.COM, INC.

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Summary

Bandwidth.com, Inc. ("Bandwidth.com") believes that the Federal Communications Commission ("Commission") will best serve the public interest by moving forward to promulgate rules to promote ubiquitous text-to-911 solutions for the deaf and hard-of-hearing community as quickly as possible. Having worked with VRS/TRS and IP Relay services and after participating in several text-to-911 trials across the country, Bandwidth.com knows first-hand that workable solutions do exist. These solutions represent a material step towards parity in access to emergency services between the deaf and hard-of-hearing community and the hearing public.

Proceeding with an interim text-to-911 solution provides several additional benefits to the industry and consumers. Enabling text-to-911 will spur a more rapid deployment of NG911, which will provide additional, more elegant and cost-effective emergency calling options. However, as the industry's experience with E911 and Wireless Phase II demonstrated, some PSAPs may require a decade or more to fully implement a NG911-based text solution. Therefore, an interim solution can act as a "backstop" during the NG911 evolution to ensure text-to-911 services for the deaf and hard of hearing community are ubiquitous.

Establishing a flexible nationwide "base level" text-to-911 functionality will allow ubiquitous or near-ubiquitous coverage for the disabled community even if specific technical specifications or network architectures of text-to-911 solutions or NG911 systems develop in a non-uniform manner. Bandwidth.com supports the implementation of interim text-to-911 solutions while also supporting the state and local 911 Authorities' right to select a path to meet the unique needs of their citizens. TRS/VRS and IP Relay services offer one option that many states will embrace. Text-to-TTY offers certain technical and operational advantages. Bandwidth.com has developed first-hand experience with this alternative approach in trials with Agent511 designed to test text-to-TTY capabilities. The trials that Bandwidth.com has

participated in as well as the trials noted by Intrado, Verizon, and others demonstrate that current text-to-911 options of various types have their own blend of strengths and weaknesses. Because there are subjective distinctions between the available alternatives, state and local 911 authorities should have the flexibility to choose among the interim options in addition to the option of moving to a full NG911 system to provide equal access to 911 for the deaf and hard-of-hearing community.

Both originating network service providers ("OSPs") and over-the-top application providers must be required to participate in the interim solution. However, rules promulgated by the Commission should minimize the cost and complexity these providers face. To accomplish this, Bandwidth.com and others recommend the use of a national clearinghouse for text-to-911 call routing. An appropriately structured national clearinghouse can facilitate proper routing of text-to-911 messages from any source if the messages are initially delivered to the national clearinghouse. The function of the clearinghouse would be to determine both the method of delivery and the Public Safety Answering Point ("PSAP") to which the call should be delivered. Thus, a clearinghouse would resolve a large number of the issues raised in the initial comments by establishing a method for both text-TTY and IP Relay to function based upon the requests of a PSAP or another applicable emergency service authority. This "layer of abstraction" between the OSPs and the state and local 911 Authorities has many advantages to all stakeholders. First, the deaf and hard-of-hearing community would have a ubiquitous and consistent service no matter where they travel in the country. Second, originating service providers would have one interface that is easy to access and provides connectivity to all PSAPs regardless of the text-to-911 method they have chosen today and as it evolves. Finally, the state and local 911 Authorities have the flexibility to select the text-to-911 method they determine strikes the appropriate balance between the features favored by their citizens and the need to ensure public safety.

Implementation of the proposed clearinghouse can and should be based on the NG911 architecture established by NENA. The NG911 Emergency Call Routing Function, Emergency

Services Routing Proxy and other NG911 functions described by NENA are defined to support the clearinghouse described. This approach is not a departure from the path to NG911. It is entirely consistent with that migration path and, in fact, represents a significant leap forward in the rollout of NG911.

The approach proposed by Bandwidth.com provides a text-to-911solution today and a straightforward and seamless migration to NG911 as these developments unfold. While the limitations of the various approaches to text-to-911 will still exist, they can be mitigated to some extent and, regardless, there are clear benefits to proceeding with mandating text-to-911 capabilities for the TRS/VRS end-user base at the very least. On balance, Bandwidth.com believes that technically viable and cost-effective options exist that would allow the deaf and hard-of-hearing community improved parity with the rest of the citizens in the United States with respect to access to 911.

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REPLY COMMENTS OF BANDWIDTH.COM, INC.

I. Introduction

Bandwidth.com, Inc. ("Bandwidth.com") brings a wealth of practical, real-world experience to the discussion of options for transitionary text-to-911 solutions for the deaf and hearing impaired. First and foremost is Bandwidth.com's experience in providing 911 services to carriers. Bandwidth.com routes tens of thousands of calls every month to Public Safety Answering Points ("PSAPs") across the country. Nearly 300 CLECs, ILECs, and VoIP service providers rely on Bandwidth.com to deliver 911 calls from their subscribers to the appropriate PSAP. Two call routing facilities process and route all calls using the same geospatial routing mechanisms found in the National Emergency Number Association ("NENA") NG911 Standard (NENA 08-003).

In addition to CLECs, ILECs and VoIP Service Providers, Bandwidth.com is pleased to count telecommunications relay service ("TRS")/video relay service ("VRS") and IP Relay providers as a significant portion of its customer base. In fact, Bandwidth.com supports more TRS/VRS and IP Relay providers with their emergency calling capability than any other company. The close partnerships Bandwidth.com has with TRS/VRS and IP relay service providers has given Bandwidth.com a keen understanding of how these services work and how they could potentially be enhanced through the implementation of text-to-911 capabilities.

Bandwidth.com's systems for routing 911 calls are designed to be compliant with the NENA NG911 standard. Bandwidth.com has responded to several requests for proposals ("RFPs") developed by states for NG911 routing Services. In July of 2011 Bandwidth.com was selected by the State of Alabama to provide NG911 call routing services across the state. In addition to actively pursuing NG911 business with state 911 Authorities, Bandwidth.com is active in many NENA Technical Committees and is currently the Chair of the Policy Routing Rules Working Group. Bandwidth.com has participated in the last two NENA Industry Collaboration Events and is participating on the planning committee charged with designing an event to test NG911 support for text-to-911.

As a leader in routing both 911 and NG911 calls, Bandwidth.com has been invited to participate in a number of industry trials of text-to-911. Bandwidth is currently providing call routing services for the trial under way in Greater Harris County, Texas with Agent511. Bandwidth.com also provided call routing and call delivery for the demonstration conducted by Neustar that Chairman Genachowski attended at the Washington, DC PSAP.[1]

II. The Comments Demonstrate a Variety of Options Available for Interim Text-to-911

The initial comments demonstrate that key industry members, including representatives of the deaf community,[2] public safety[3] and 911 solutions providers,[4] share some fundamental beliefs that a number of workable solutions exist for interim text-to-911 and, that text-to-911 should be made available in the near-term, at a minimum to persons with disabilities. Because

[1] *See* Neustar *Ex Parte* Notice, PS Docket No. 10-255 (filed Sept. 16, 2011).
[2] Comments of Rehabilitation Engineering Research Center on Telecommunications Access at 4; Comments of Telecommunications for the Deaf and Hard of Hearing, Inc., et al. at 4-8 ("TDI Comments").
[3] Comments of the Association of Public-Safety Communications Officials-International, Inc. at 2; Comments of Joint Comments of the Boulder Regional Emergency Telephone Service Authority and the Colorado 911 Task Force at 15-17; Comments of the Public Safety Communications Office of the California Technology Agency at 4-5; Comments of the Texas 911 Alliance at 4-6.
[4] Comments of Intrado, Inc. at 5-16 ("Intrado Comments"); Comments of Telecommunications Systems, Inc. at 3-11.

Bandwidth.com also firmly believes that disabled consumers will benefit if text-to-911 functionality is enabled, these comments focus on areas of consensus or solutions to discrete issues that have been identified in the opening comments. While Bandwidth.com is not responding to each of the comments that fundamentally argue against adopting any form of text-to-911 solutions short of full NG911,[5] Bandwith.com notes that the interim national clearinghouse supported by Bandwidth.com and others will address many of the concerns cited by these parties.[6]

As the Commission has noted, the technical inadequacies of text communications are well known and thus are not the focus of the inquiry here.[7] However, the overwhelming popularity of texting services in the marketplace demonstrates that consumers see value and have developed behavioral dependencies on the services.[8] Therefore, the communications industry as a whole has an obligation to meet the task of providing the best available emergency service support it can. The fact that the traditional voice-based 911 emergency system is superior to what could be provided with text-to-911 in the near term, can reasonably lead to the conclusion that a truly ubiquitous text-to-911 solution fails a thorough cost-benefit analysis.[9] With respect to the speech and hearing disabled community however, the cost-benefit analysis yields the opposite

[5] It is important to note that Bandwidth.com also supports the longer-term session initiation protocol ("SIP")-based and IP Relay solutions proposed by other parties. However, given the critical need by deaf and hard-of-hearing consumers for a workable, interim text-to-911 solution and the existence of solutions that can address that need at low-cost as a step toward NG911, it is in the public interest to take that interim step.

[6] Two of the main criticisms of those parties that oppose even an interim text-to-911 solution are that service providers cannot guarantee delivery of the messages and it would be costly to implement. A national clearinghouse, such as that proposed by Bandwidth.com and AT&T, can resolve these issues. Because the clearinghouse would be dedicated to delivery of 911 calls, both voice and text, the problem of immediate delivery goes away. Once a text message gets to the clearinghouse, it can ensure delivery to the appropriate PSAP. Expanding liability protections to include text-to-911 would also mitigate some of these concerns. In addition, the clearinghouse would require only a single interface and one location for service providers to delivery text-to-911 calls. Comments of AT&T, Inc. at 14 ("AT&T Comments"). This approach is more efficient and cost-effective and eliminates the potential for delay created by having to identify the appropriate route for a text message.

[7] *In the Matter of Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications Framework for Next Generation 911 Deployment*, Notice of Proposed Rulemaking, PS Docket Nos. 11-153 and PS Docket No. 10-255, 26 FCC Rcd 1361, at ¶ 54 (2011) ("*NPRM*").

[8] *See NPRM*, at ¶ 34.

[9] *See* Comments of the Alliance for Telecommunications Industry Solution at 7-8; Comments of The University of Colorado's Interdisciplinary Telecommunications Program ("CU-ITP Comments").

result.[10] Because there is an imbedded rule set as well as service functionality for disabled end-user access to emergency services, there is a more readily available and cost-effective way to enable transitional text-to-911 capabilities for this community of end-users.

A. TRS/VRS and IP Relay providers

Relay providers already play a key role in translating emergency calls from their customers and delivering those calls to appropriate PSAPs. Experience and expertise with emergency calling for the disabled community can be leveraged to support text-to-911solutions. Utilizing relay providers for handling of text messaging is an established mechanism to translate non-verbal communication for a PSAP call taker. A text message would be delivered to an operator who would then establish a call to the appropriate PSAP. The operator stays in the conversation for the entire duration. Relay operators are highly trained in handling text based communications and are in many ways ideally suited to facilitate text messaging. Some modifications would likely need to be made to the relay operator's systems to provide consistency because most rely on custom developed applications to communicate with their subscribers and facilitate a more interactive session. The asynchronous and disconnected nature of text messaging would also present an initial challenge that would need to be overcome. However, solutions exist today that can address these issues.[11]

Some of the current complaints regarding the speed of call delivery would likely be mitigated by more readily available location information that could be passed to the operator. For example, using existing location technology, supplemented by highly-trained call center personnel, to determine the caller's location could improve upon the current location registration process for today's purposes. Intrado also appears to support the use of a 911 Message Center or Text Positioning Center that incorporates location information to reduce call delivery time to

[10] *See, e.g.*, Intrado Comments at 5-16; TDI Comments at 5-6.
[11] Intrado Comments at 5-6.

levels comparable to traditional 911 calls.[12] Many PSAPs could readily adopt this approach as it requires no modification to their existing equipment or any additional training. Likewise, the University of Colorado Interdisciplinary Telecommunications Program ("CU-ITP") conducted tests that show text-to-911 calls can be placed in about the same amount of time as dialing 911 from a mobile phone and with near 100% reliability.[13]

B. Text-to-TTY

Text-to-TTY message routing involves a specially designed service that can receive text messages and convert them to TTY calls in an automated fashion. When an emergency text message is received through this type of service the sending party message is compared to all established sessions. If a current session exists then the emergency message is converted to TTY tones and delivered over the established call to the PSAP call taker. If a new session is required then a new emergency call is initiated and delivered to the appropriate PSAP based on the location of the sender. All PSAPs are capable of receiving these kinds of calls.[14] However, line quality and PSAP premise equipment can degrade communications by dropping or changing characters. Bandwidth.com has witnessed some of these kinds of service quality issues during trials in which it has participated and is aware of similar experiences in other trials.[15] While there can be service quality issues, the real benefit to this method is that there is a much more direct level of communication between the person in the emergency situation and the PSAP call taker. Some retraining of PSAP call takers and TTY users would be required as there are many linguistic and message flow differences between TTY and texting, but nevertheless, it is a viable alternative with important advantages that should be considered for use as part of the transitional deployment of text-to-911 services for the disabled user community.

[12] Intrado Comments at 7-8.
[13] CU Comments at 2-3.
[14] *NPRM*, at ¶ 22.
[15] *See* Comments of Neustar, Inc., at 4. As Neustar noted, the causes of these incidents are usually identifiable and resolvable.

C. Web-based text delivery

This type of service receives text messages from the sender much like a text-to-TTY solution, however, it does not deliver them over the traditional 911 voice network. Instead PSAP call takers are logged into this system either directly or through their premise equipment. Delivery of 911 calls outside of the traditional network has the advantage of not tying up voice trunks for text sessions, but does place the requirement to have a critical grade IP network on the PSAP. An additional benefit is that call takers can potentially be allowed to handle multiple text sessions at the same time. Agent511 is one company that offers this type of service and has been active in multiple trials of this particular method of supporting text-to-911.

In sum, the text-to-911 options discussed above each have different strengths and weaknesses relative to the characteristics the Commission identified in the NPRM. Among these are: 1) cost and time to implement; 2) location accuracy and time to deliver location information; 3) use of existing 911 Authority network and equipment; 4) elapsed time to engage the PSAP; and 5) subscriber interface ease of use. State and local 911 Authorities will view the comparative strengths and weakness of each option differently based upon their own unique circumstances. For this reason, the selection of the particular interim text-to-911 solution should be left to the 911 Authorities who are best situated to determine the optimal solution for their constituents.[16] As new solutions come to market, 911 Authorities may choose to migrate to the new solutions. Fortunately, at some point, all solutions will converge on the NG911 architecture defined by NENA. Some solutions may provide enhanced capabilities including subscriber information, but the routing and delivery of text messages to the appropriate PSAP will become more consistent over time.

For all of the alternatives that have been described by and advocated for in initial comments - from Neustar's support for Text-TTY, to the wireless industry's apparent support for

[16] Initial Comments of the Texas 911 Alliance at 3 8-13; Comments of the National Association of 911 Administrators at 8-10.

IP Relay, to those that support Real-time Tex ("RTT") like INdigital - a local text-to-911 mandate could be compatible with a national text-to-911 clearinghouse. To demonstrate how the principle proposals would fit together with a national text-to-911 clearinghouse, Bandwidth.com attaches three diagrams that depict the network functionalities of each potential solution. Exhibit 1 shows the integration of the Text- to-TTY solution into the national text-to-911 clearinghouse. Exhibit 2 shows the integration of the Agent511 solution into the national text-to-911 clearinghouse. Finally, Exhibit 3 demonstrates the manner by which an IP Relay text-to-911 call would traverse the network after initially being received by a national clearinghouse provider.

III. The National Text to 911 Clearinghouse

Bandwidth.com supports the comments of AT&T and others that propose a national clearinghouse as a method to most effectively address text-to-911 issues that have been identified.[17] As AT&T notes, a national clearinghouse would both expedite deployment of the service and alleviate some of the shortcomings associated with using SMS for emergency communications.[18] While a clearinghouse will not be a panacea, there are some specific advantages that accompany a national clearinghouse supporting interim text-to-911 services to highlight. First, it simplifies and reduces costs for all originating service providers. The clearinghouse provides a clearly-defined, nationwide interface for the wireless carriers and over-the-top application providers. With a single interface, OSPs do not have to deal with the state-specific and unique interfaces for either the interim text-to-911 services nor do they have to keep track of state implementation of NG911. The clearinghouse also provides the states and/or local 911 Authorities the flexibility to implement one of the many text-to-911 solutions described in other comments. This flexibility allows the authorities to pick the solution they believe is most appropriate for the citizens they service. A clearinghouse can then allow 911 Authorities to

[17] AT&T Comments at 13-16.
[18] AT&T Comments at 13.

change their preferred method for receiving text-to-911 without requiring the OSPs to modify their interface to the national system.

To be sure, there are several challenges that must be addressed; however, many of the identified challenges are readily overcome.[19]

1. The database used by the national text-to-911 clearinghouse (in NG911 terms, the Emergency Call Routing Function ("ECRF")), must hold information about the system selected by the state or local authority. All PSAPs must choose a preferred option; however, a default option could be chosen by the Commission for all PSAPs. Given the considerable support already provided by TRS/VRS and IP Relay providers in the context of existing 911 services, these entities would be a good choice as a default option. The text-to-TTY solution demonstrated by Neustar is also a good choice since it requires no changes to the exiting 911 system and all PSAPs are, under the Americans with disabilities Act, required to support TTY.[20]
2. Each OSP and each system chosen by the 911 Authorities would need to establish a critical grade IP network connection to the national text-to-911 clearinghouse. This is not seen as an onerous requirement because of the small bandwidth required, and the almost ubiquitous availability of IP networks.[21]
3. Standard interfaces must be used between the OSP and the clearinghouse, as well as between the clearinghouse and the 911 Authority's system. Bandwidth.com's preference would be to utilize existing NENA NG911 standards to deliver the location through the ECRF and Location Information Server ("LIS"). However other technologies like SMPP or RTTP can be combined with traditional automatic location identification ("ALI") to deliver the required information. Protocol translation can easily be handled by the

[19] AT&T Comments at 13; Intrado Comments at 6.
[20] *NPRM*, at ¶ 19.
[21] Intrado Comments at 9.

clearinghouse to facilitate the broadest level of acceptance among all providers and systems.

4. Finally, a default destination for text messages that do not have location information must be determined. The TRS/VRS and IP Relay service providers provide an excellent option for this function given their existing role in facilitating communications between deaf or hard-of-hearing callers and PSAP personnel. The Text Positioning Center described by Intrado is another good option that would be relatively easy to implement since it is based on existing Mobile Positioning Centers currently used to provide location information for mobile 911 calls.[22] Likewise, AT&T's proposal to use Regional Call Centers that would handle text messages without location information provides a good alternative.[23] Each of these alternatives can be modeled on existing entities and can leverage existing infrastructure to reduce the cost of the transition.[24]

The requirements outlined above should not be costly or onerous to stakeholders involved; particularly those that have already begun to implement NG911 concepts. In fact, as noted by Intrado, no new technical standards would be required to implement a workable interim text-to-911 solution.[25] Many of the necessary components of a holistic transitional solution already exist and are being used by service providers, PSAPs and 911 solutions providers and should be leveraged to quickly enable text-to-911 for disabled end-users. Intrado also provides detailed estimated cost data in its comments to demonstrate that the cost of deploying a workable text-to-911 solution should not impose an unreasonable financial burden on PSAPs, services providers or consumers.[26]

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[22] Intrado Comments at 4-8.
[23] AT&T Comments at 17-20; Intrado Comments at 13-15.
[24] AT&T Comments at 13, 18; Intrado Comments at 13-14; Comments of the National Emergency Number Association at 4.
[25] Intrado Comments at 10.
[26] Intrado Comments at 13-18. In addition, if, as Intrado suggests, the Commission considers designating text-to-relay center services as compensable TRS services, some of these costs may be defrayed by TRS support.

IV. An Interim Text-to-911 Solution is Complimentary with the Migration to NG911

Most NG911 migration rollout scenarios share some fundamental common characteristics. First, among the anticipated commonalities is that states will implement NG911 solutions individually and to varying degrees over distinct periods of time. Second, the capabilities of the NG911 systems will vary from state-to-state and jurisdiction-to-jurisdiction. Finally, complete evolution to a nationwide NG911 will likely take a decade or more and even then may not be completely ubiquitous.

The national text-to-911 clearinghouse envisioned by Bandwidth.com, which appears to be supported by AT&T and others, as well, provides a level of consistency across all OSPs, across all applications, across all states and across all PSAPs. This consistency reduces the need for subscriber education.[27] Once NG911 systems are in place across the country, the user experience of text to 911 will remain the same as in the initial implementation even though the routing and delivery will be NG911. In addition, as AT&T notes, the industry, working with both standards-setting bodies, public safety, and service providers, has attempted to define the end-to-end capabilities of an interim text-to-911 solution for persons with disabilities and for next generation emergency communications that incorporate both texting and multimedia access.[28] Thus, the creation of an interim text-to-911 solution, based on current technology but adaptable to NG911, that itself establishes a degree of consistency and uniformity will promote a transition to NG911, not hinder or impede it.

The proposed national text-to-911 clearinghouse is also consistent with the NG911 by virtue of the architecture and functional components employed. The components used are defined in the NENA standard 08-003 and specifically include ECRF, the Emergency Services Routing Proxy ("ESRP") and LIS. The application of these functional elements may extend

[27] AT&T Comments at 17-18.
[28] AT&T Comments at 11.

beyond the uses prescribed in the standard but are nevertheless clearly within the scope and capabilities of the original architects of the NENA standard.

The application of the ECRF and the ESRP are consistent with the concept of a National Forrest Guide which is defined in the NENA standard. This concept provides a single entry point into the National Emergency Services System from which a call will be routed to the dispatch center best equipped to deal with the subscriber's emergency.[29]

While NG911 systems and their discrete capabilities will likely vary throughout the country, this should not be a reason to delay making interim advances where the public interest is served. States that implement the NG911 Emergency Services IP Network ("ESInet"), call routing and call handling systems can have the ability to simultaneously provide NG911 text-to-911.[30] However, projects in Alabama, Iowa, and other states are only focused on the NG911 ESInet and call routing. These states' NG911 systems will have the ability to route text-to-911 calls but only PSAPs that have upgraded to NG911 systems and trained their staffs will be able to accept these calls. In cases such as these, an interim text-to-911 solution can act as a buffer for the deaf and hard-of-hearing community to provide much needed services today and ease the transition to NG911.[31]

V. Standards and Implementation Considerations

Intrado estimated the cost of a national text-to-911 solution at $300 million over five years.[32] This estimate was part of Intrado's discussion and, ultimate conclusion, that the benefits of an interim text-to-911 solution would exceed any costs.[33] In addition, Intrado was clear to point out that these cost estimates could well change if PSAPs, services providers and 911 Authorities are given an opportunity to and can bundle text-to-911 solutions with other NG911

[29] *See* AT&T Comments at 14 (discussing need for only a single point of interface between providers and the national clearing house).
[30] AT&T Comments at 18; *NPRM*, at ¶ 8.
[31] TDI Comments at 3-5; Comments of the Rehabilitation Engineering Research Center on Telecommunications Access at 4.
[32] Intrado Comments at 14.
[33] Intrado Comments at 5-17.

solutions.[34] As discussed above, there a several options upon which to model an interim text-to-911 solution that are based on existing technology and, therefore, can expedite implementation of a solution and likely in a more cost-effective manner. In addition, basing the national text-to-911 clearinghouse on the NENA NG911 standards allows many organizations that have invested in NG911 products and services to play a role without significant investment. The greater the number and variety of options allowed for delivery of text messages and location of the clearinghouse and the broader the range of interfaces to state and local 911 Authorities, the more likely it is that custom development would be required. However, Bandwidth.com does not believe this is a large effort. And, as noted earlier, providing greater options and flexibility would permit PSAPs and 911 Authorities to tailor a solution best-suited for their own users.

The potentially larger investment is likely to be the network required to support the service; however, there are options for reducing even these costs. OSPs would need to implement a network for delivery of the text messages and allow network access to the source of subscriber location information. If, as suggested by some parties, the clearinghouse can perform both functions, it would eliminate the need for separate networks. For example, under AT&T's depiction of an interim solution, service providers would route text messages through their SMS center to the clearinghouse, which would in turn, verify the location of the caller, identify the appropriate PSAP to deliver the text and confirm whether that PSAP was text-ready.[35]

For reliability and availability, at least two instances of the clearinghouse would need to be implemented, which would require OSP connectivity to two locations and network from each location to each state and/or PSAP. Using either existing TRS/VRS and IP relay services or the text-to-TTY option could reduce these network costs because these services would not require any new network, but would include a cost for using the existing network. As discussed in the

[34] Intrado Comments at 17.
[35] AT&T Comments at 14. In the event the PSAP is not text-ready, the clearinghouse would route the call to a relay center, which would contact the PSAP and relay location and other information. If the clearinghouse could also perform this function, it would add greater efficiency and further reduce the investment necessary to implement the solution.

comments, limiting the selection of text-to-911 systems to one per state would reduce the cost and ease of implementation.[36]

The Commission also has several options for establishing the national text-to-911 clearinghouse. One option would be to fund a single vendor using existing funds collected to support TRS/VRS services.[37] The Commission, working with PSAPs, service providers and consumers, could conduct a thorough procurement process to select the best, most cost-effective provider to act as the national clearinghouse. In addition to potentially reducing the overall cost of implementing text-to-911, this option also has the advantage of simplifying and accelerating the rollout of the clearinghouse.[38]

Alternatively, the Commission could establish rules that require all OSPs to provide text-to-911 and allow multiple companies to provide services to the OSPs to help them meet their obligations. This is essentially the model that the interconnected VoIP service providers use to meet their obligations. This option has the advantage of relying on the competitive market to bring forward the best and most cost-effective services. However, it has the potential disadvantage of producing differing provider models, solutions and technologies, which could affect interoperability. To mitigate this potentiality, the Commission could establish minimal criteria for certain core functionality to ensure that these functions are consistent among various providers or require that any solution also be interoperable with other solutions in the market.

One additional advantage of this option is that it would automatically bring text-to-911 services within the existing statutory liability protections available to other service providers. Specifically, as noted by other parties, federal law extends 911 liability protections to carriers, wireless providers, IP-enabled services providers, and other communications services provider and, most importantly for a text-based solution, to an entity other than a local exchange carrier, wireless carrier, or an IP-enabled voice service provider that is required by the Commission to

[36] AT&T Comments at 13, 16-17.
[37] Intrado Comments at 18-19.
[38] AT&T Comments at 13.

provide other emergency communications services.[39] If the Commission requires all OSPs to provide text-to-911, these entities will be protected from state law liability under the provisions of federal statute.

Bandwidth.com supports the concept of using the TRS Fund to compensate eligible text-to-relay 911 service providers, including a national clearinghouse should the Commission pursue this avenue. Given that an interim text-to-911 solution would supplement or replace the TTY, TRS/VRS and IP Relay services, currently used by the deaf and hard-of-hearing community to place emergency calls, it is reasonable for text-to-911 service also be eligible for compensation from the fund. Bandwidth.com.com does not recommend any model that requires funding from the 911 Authorities.

VI. Over-the-Top Application Providers

The Commission seeks comment on software-based approaches as a short-term and potential long-term alternative for developing a non-voice NG911 system that will support the delivery of text and other media to 911 along with location information.[40]

In this docket, the Commission has noted that the expansion of commercially available location-based applications has sparked higher demand for location services.[41] At the same time, the Commission recognizes that the separation between originating service providers from network operators adds challenges to delivering real-time automatic location information to PSAPs,[42] and has raised the issue of what obligations should be imposed on parties providing location-based applications.[43] For example, the Commission has noted that an over-the-top VoIP service provider is a different entity from the underlying broadband provider. In this situation, the over-the-top provider might not have current information about the user's location, while the

[39] 47 U.S.C. § 615B(9).
[40] *NPRM*, paras. 57-59, 84-86.
[41] *See Framework for Next Generation 911 Deployment*, Notice of Inquiry, 25 FCC Rcd 17869, ¶ 76 (2010).
[42] *See id.*
[43] *See id.*

provider of Internet connectivity is aware of the customer's location, but not the fact that a customer is placing an emergency call.[44]

Bandwidth.com agrees with the Commission's suggestion that the most efficient solution would be one in which all parties play a part and share responsibility.[45] Bandwidth.com counts as its customers some of the most innovative companies in the country including Google, Skype, and Pinger. Bandwidth.com has considered these and other over-the-top application providers in our recommendation for a national text-to-911 clearinghouse. These service providers can easily be included in the system. The primary consideration for including these providers is the determination and accuracy of location information. If the SMS application resides on a fixed or nomadic device, location information can be established as it is currently with VoIP service providers. If the application is hosted on a mobile device that is equipped with GPS, location information from the GPS can be used to route the text message and provide location information for first responders. If the device hosting the application does not have GPS or if additional location accuracy is desired or required, access to the location determination facilities implemented by the wireless carrier would be required. This access can be provided through the commercially available interfaces they make available, or through the interface currently used to determine location when 911 is dialed.

Including providers of texting capability in the transitional text-to-911 system will make the service more accessible to the deaf and hard-of-hearing. It would also stimulate the development of new applications specifically geared toward enhancing the ability of the deaf and hard of hearing to access public safety via texting. To further stimulate innovation, the Commission should consider the extension of liability protection to this class of OSPs as well. As noted by Intrado, existing liability protection should extend to the majority of text-to-911 solutions because federal law extends state liability protection to wireless carriers, IP-enabled

[44] *E911 Requirements for IP-Enabled Service Providers, Notice of Proposed Rulemaking*, Third Report and Order, and Second Further Notice of Proposed Rulemaking, 26 FCC Rcd 10074, ¶ 72 (2011).
[45] *See id.*

voice service providers, and other communications providers that provide emergency support.[46]

VII. Conclusion

Bandwidth.com urges the Commission to develop an interim national text-to-911 solution that addresses the critical needs of the deaf and hard-of-hearing community. Bandwidth.com's own experience working with VRS/TRS and IP relay providers, carriers, VoIP service providers and innovative texting companies demonstrates that workable, cost-effective solutions for text-911 exist and can be implemented in the short-term. Rather than serving as a bridge to nowhere, these interim solutions provide a platform for the transition to more rich text-based functionality in NG911. Bandwidth.com also supports the recommendations in the record for creating a national clearinghouse to facilitate the development, implementation and operation of an interim text-to-911 solution and encourages the Commission to begin working to implement a national text-to-911 clearinghouse as quickly as possible. Bandwidth.com welcomes the opportunity to engage in further dialogue with the Commission and other stakeholders to develop the legal, technical and operational framework for a text-to-911 solution that can be implemented in the near-term, yet also remain viable during the inevitable transition to NG911.

Respectfully submitted,

/s/

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[46] *See* Comments of Intrado at 12 (citing the liability parity provisions of the Wireless Communications and Public Safety Act of 1999 as amended by the New and Emerging Technologies 911 Improvement Act of 2008 (codified at 47 U.S.C. § 65).